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SURVEY PAPER

Gender and Trade Aspects of Labour Markets

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ABSTRACT *We provide a comprehensive up-to-date review of the large body of theory and evidence on the linkages between trade liberalisation and gender inequality in income, as well as two of the latter's key underlying determinants: wages and employment. On balance, the evidence for developing countries points to an overall beneficial impact of trade expansion on female employment, both relative to male employment and in absolute terms, although largely concentrated in unskilled manufacturing. By contrast, the bulk of the evidence suggests a widening gender wage gap as a result of freer trade.*

1. Introduction

In recent decades freer trade has been regarded as the 'royal highway' to fostering economic growth and reducing poverty, and trade liberalisation has been one of the main prescriptions of the 'Washington Consensus' on reform measures required for ailing economies. Reductions in tariffs, the establishment of the World Trade Organization and free-trade zones (NAFTA, EU-EEA, MERCOSUR), the reduction in capital controls and subsidies and the harmonisation in intellectual property right laws have all contributed to a multifold increase in the global volume of trade.

Economists tend to view trade expansion as an opportunity to achieve a more efficient allocation of resources, and enhance productivity and employment levels. While trade theorists generally point to the potential of trade expansion to benefit the economy as a whole, they also draw attention to the fact that not everyone benefits equally. Trade has differential impacts across socio-economic groups, geographical regions, productive sectors and, the focus here, the two sexes (Elson et al., 2007).

The evidence on linkages between on the one hand trade liberalisation and expansion, and on the other gender inequality is reviewed in this paper and is found to be highly diverse. The focus of the paper is primarily on gender inequality in income and two of its key underlying determinants: wages and employment. Although gender inequality in other domains is touched on, expanding the analysis towards these domains would be at the expense of an in-depth

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discussion of the already extensive literature on gender inequality in income and trade within the confines of a single paper (in the online appendix we briefly discuss evidence on the impact of trade expansion on gender inequality in domains other than income). There have been earlier surveys of the literature on gender inequality and trade (Çağatay, 2001; Fontana, 2003; Tran-Nyugen and Bevigilia Zampetti, 2004). Our contribution is twofold. First, we update these surveys with more recent evidence on the impact of trade on gender inequality (and vice versa), while reviewing the methodological characteristics of the empirical studies. Second, and more importantly, the paper links the theoretical findings on trade-gender links with the empirical evidence of econometric studies in the field. In Section 2, we discuss in detail the theoretical mechanisms linking trade expansion and gender inequality in income, as identified within the literature on trade and labour economics. In Section 3, we critically examine the evidence (including case-studies) that exists in relation to the theoretical links presented in the previous section. Section 4 concludes by highlighting gaps in current knowledge of trade and gender aspects of labour markets.

2. Gender and Trade: Theory

Women and men are often exposed to trade expansion in different ways (Ghiara, 1999; Kucera and Milberg, 2000; Fontana, 2007). The impact of trade on gender equality is complex, with many factors simultaneously at work. Trade expansion affects relative prices, income levels, employment patterns, the size of productive sectors, and all these may in turn have gendered implications as we will discuss below. In addition, existing gender inequality co-determines comparative advantage and thereby the sectors in which a country will specialise for exports.

We outline in this section a basic framework presenting the theoretical mechanisms through which trade expansion can affect gender inequality in income (and its underlying determinants, for example, employment, asset ownership, changes in factor prices). The plausible reverse causality running from gender inequality to trade expansion is also briefly discussed at the end of this section. A natural step to begin with is by linking gender inequality in income to inequality in the ownership of production factors (for example, labour, human and physical capital, land) as well as their corresponding returns, similar to Anderson (2005). In algebraic terms one can define (and decompose) income by gender as:

$$Y_j = r_{1j}w_{1j}P_1 + \ldots + r_{ij}w_{ij}P_i, \tag{1}$$

where Y_j is income received by gender ($j=f$, m: f for the female and m for the male population), P_i stands for the overall endowment of any production factor i in the economy, w_{ij} captures the share of ownership of each production factor by gender and r_{ij} is the gender-specific return to each factor of production. A ratio of female-earned income over its male counterpart (that is, Y_f/Y_m) below one suggests the presence of gender inequality in income in favour of the male population.

Equation (1) serves as a framework to organise the discussion below, focusing on gender-specific ownership of and returns on production factors, which may vary by sector or industry. It is then useful to distinguish two types of effects: namely inter- and intra-industry gendered impacts (see Tejani and Milberg, 2010). Intra-industry effects relate to gendered impacts within a given industry, for example, when trade liberalisation exacerbates male-female wage gaps in a particular industry, often for employees with very similar characteristics. On the other hand, inter-industry effects pertain to the relative size of different sectors (that is, the structure of the economy) that vary in patterns of ownership by gender of production factors. For the latter type of effect, the crux is whether trade expansion corresponds with an expansion or contraction of female(male)-intensive sectors. For neither intra- nor inter-industry gendered effects of trade is it necessary to assume that trade is inherently gender biased; it may simply reinforce or exacerbate existing patterns of gender inequality embedded in the labour market.

Even as a neutral force whose immediate effect is only on the balance of economic activities, trade, through the labour market, interacts with a host of social and economic factors to bring about gendered impacts. The initial feminisation/masculinisation of particular sectors, as well as subsequent resistance (or not) in achieving a gender-neutral sorting in job access, is partly linked to gendered access to productive assets (time, credit, land, human capital) as well as gender norms and stereotypes that result in an implicit segregation of occupations by gender. Hence, while economic reasoning (for example, differences in educational attainment) may for instance explain to some extent gender segregation across sectors, perceptions on differential abilities of the sexes (for example, with regard to the capacity to carry out physical or repetitive work) further contribute to such trends. This interplay of economic characteristics and gender norms and stereotypes influences firms' hiring practices and often results in women being concentrated in sectors where workers face a lower pay and less security (particularly in sectors that face a high price elasticity of demand as a result of intense international competition).

We will now turn our attention to the predictions of economic theory with respect to the impacts of trade expansion on gender inequality and its underlying determinants, using the framework developed above to organise the discussion.

2.1. Factor Prices (r_{ij})

Let us assume that returns to factors of production do not vary across men and women ($r_{if} = r_{im}$), an assumption that we will relax as the analysis proceeds. Conventional trade theory suggests that economies specialise in sectors that make intensive use of relatively abundant production factors. The Heckscher-Ohlin (HO) model assumes that if a country is more abundant in, say, production factor k (capital) than l (labour) (that is, the ratio P_k/P_l for that specific economy is larger than the one of its trading partner), then freer trade will lead to an expansion of those sectors that make intensive use of the relatively abundant factor k (with a corresponding contraction of those sectors that depend on the relatively scarce factor l). Several findings of the HO model can be relevant in terms of gender equity (although one should keep in mind that the HO model can only provide an initial – and often incomplete – framework for analysis on gendered impacts, unless enriched with elements which explicitly capture salient gender dynamics in the labour market, that relate to issues of discrimination, job segregation and unemployment across sexes). The expansion of exports, as a result of freer trade, will increase the relative prices of exported commodities, the relative demand for factors used intensively in their production, and subsequently will raise their relative return (in our previous example r_k/r_l will increase; this is the standard prediction of the Stolper-Samuelson theorem).[1] In the HO model, a country that is relatively abundant in unskilled labour and where women account for a disproportionately larger share of unskilled labourers will hence experience an increase in wages and income for the female labour force relative to their relatively skilled male counterparts.

Monopsony - Discrimination ($r_{if} \neq r_{im}$)

A stream of influential work on labour market frictions has recently focused on labour demand and the monopsony power of employers to explain the gender wage gap (male wages exceeding female wages, with the gap commonly expressed as a share of the former). Much of this work has been pioneered by Manning (2003), who explored theoretically the implications for gender wage inequality of the market power employers possess over their workers. Manning's theory of labour monopsony has close links to the theoretical extensions of the HO model with unemployment (which we touch upon in the next subsection) and also assumes that the discriminatory power of the employer depends on the wage elasticity of the labour supply (Manning, 2003; Bhaskar et al., 2002). The crux is that female workers may be more prepared than males to accept lower wages set by their firm, if they are more reluctant than men to switch jobs (to avoid search costs in the form of time and foregone income).

An outline of his theory is as follows. Firms may have considerable power in setting the wage level, particularly for workers with low skills (whose labour input is not differentiated). Employers may hence become *discriminating monopsonists*, creating a wage gap for workers of identical skills (but discrimination can also come in other forms, such as hours of work, work conditions and so forth). Manning (2003: ch. 7) claims that the market for female labour is more likely to be monopsonistic than the male one, as women will have a less elastic labour supply with respect to wages, for two reasons. First, women may have a lower *reservation wage* (defined as the lowest wage at which a job offer will be accepted), as their job mobility is constrained by their parallel involvement in reproductive activities. Second, they often have less time available for job searching, (re)training and commuting, with their job choices motivated to a large extent by factors beyond the level of wage (for example, distance to work). In Manning's model, employers take advantage of women's relatively inelastic labour supply, thus creating a gender wage gap (which has indeed been found to be larger for those married with children, see Waldfogel, 1998).

There also other theories of monopsonistic discrimination, such as the one by Black (1995) that suggests that the unwillingness by a proportion of employers to hire women (as a result of prejudice) makes the female labour market less competitive and allows even the 'non-prejudiced' firms to wage discriminate against them. The important point to take for our purposes is that if monopsonistic conditions prevail in the female labour market, the gender wage gap may not decrease even if female employment increases as a result of freer trade.[2]

By contrast, Becker's (1971) renowned theory emphasises that when competition among firms increases, wage premiums in favour of male workers become unaffordable. Imperfect competition allows gender-based wage discrimination, which should gradually disappear as competition intensifies as a result of trade. The insight uniting each of the theories discussed in this subsection is that in non-competitive environments, resulting from limited competition due to barriers to entry, employers are able to afford satisfying discriminatory preferences in terms of gender. The difference between them is that in Becker's theory trade expansion always helps to alter the structure of the labour market in the direction of perfect competition, whereas it does not in Manning's and Black's theories, which explains why in the latter case the gender wage gap may be more sticky.

2.2. Share of Production Factors (w_{ij})

The ownership of production factors by gender is a crucial factor in understanding changes in gender income inequality as a result of trade openness. For instance, freer trade can improve the relative income position of women if the economy has a comparative advantage in goods that make intensive use of unskilled labour, and if women are relatively more often the 'owners' of the production factor unskilled labour compared to other productive assets – for example, capital, that is more often male-controlled.

Furthermore, individuals will have an incentive to skew their ownership of assets towards the abundant production factor, if freer trade gradually raises the relative demand and price of it. Acquisition of new assets is costly though (both in monetary and time terms), and women's accumulation of factors of production may be less responsive to positive changes in their prices if they face more constraints than men do in access to credit (as a result of a lower initial level of asset endowments/collateral) or if their domestic tasks leave them 'time poor'.[3] The monetary constraints may be relaxed when trade expands, for example, as a result of increased wages of unskilled labour that may disproportionately benefit the female labour force. On the other hand, when the women's role is widely perceived to be confined to reproductive tasks and they receive limited support in carrying them out when they engage in other activities (Anker, 1997), the time constraints on acquiring productive assets (such as skills) may prove to be more durable.

Unemployment in the HO model. Although most HO models of trade abstract from discussing unemployment, a rise in the relative demand for any abundant (but underemployed) production

factor will naturally increase its rate of employment in the economy. Changes in employment have received particular interest in models that integrate imperfections in labour markets and unemployment in the HO context (Davidson et al., 1988; Davidson and Matusz, 2010). This type of analysis has particular relevance when one considers the gender-specific impacts of trade on employment. Whether expanding sectors in accordance with the comparative advantage of the economy that could in principle contribute to increased female (relative to male) employment (that is, w_{lf}) will do so in practice may depend to a large extent on implicit constraints on labour participation. One needs to incorporate insights from the labour economics literature to fully capture the speed and efficiency of adjustment in the labour markets that takes place as a result of trade openness. Search and training processes, which are necessary in order for workers to acquire sector-specific skills and efficiently seek employment (and/or relocate in the case of trade-induced structural changes) can be very costly, particularly for women, who may have limited access to time, credit or other assets to finance such a transition, and who may also be discouraged more directly from seeking employment.[4]

Labour market imperfections are thus one reason why female employment may not respond as much as it could to trade expansion, which is another way of saying that an economy's comparative advantage is not fully realised. Suppose the scenario of an economy with a comparative advantage in sectors with more job insecurity and harsher working conditions than the rest of the economy. Since changing jobs is costly, already employed labour is correspondingly more inelastic to changes in wages, with unemployed workers (sometimes more often women, other times men) more prepared to fill in new employment opportunities that arise in these expanding sectors (Davidson et al., 1999). However, if in due course higher wages are required to compensate in part for the uncertainty workers face in these sectors, the corresponding increase in production costs can skew the pattern of comparative advantage away from initially competitive commodities (see Davidson and Matusz, 2010: ch.7).

The analysis of the effect of trade on employment by gender may be complicated by the fact that trade expansion typically takes place in the context of a host of macroeconomic policies that stimulate it as well as other correlates of globalisation, such as the freer movement of capital (in the form of foreign direct investment). Many multinational firms adopt production strategies designed to reduce labour costs by outsourcing part of their production abroad (through '*firm disintegration*'), where they often make use of subcontracted labour through informal and temporary-basis labour agreements (which women are more likely to accept facing a relatively lower reservation wage; see Ghosh, 2001; Balakrishnan, 2002; Sayeed and Balakrishnan, 2002; Elson et al., 2007). Women are then often treated as '*buffer employment*' whose demand varies to accommodate the particular needs for manual labour during different stages of the business cycle; Kucera (2001) for instance gives evidence on a higher ratio of women to men in temporary employment in Germany and Japan in the 1980s and 1990s, with temporary workers perceived as a flexibility mechanism in the face of demand fluctuations. As we will discuss below, the weaker position of women in negotiating wages and secure employment has itself helped shape particular export strategies and comparative advantage for several countries.

Gender impacts on trade. Causal mechanisms relating trade and gender can run in both directions. Gender inequality in terms of wages and labour rights may affect the pattern of comparative advantage and hence trade expansion and specialisation in specific commodities. Lower female wages in export-oriented industries, for instance, created a comparative advantage in labour-intensive commodities (and stimulated export-led growth) for many East Asian economies (Seguino, 1997, 2000a, b). Intense competition in international markets, especially for commodities whose demand is strongly responsive to price fluctuations, has exerted pressure on trading firms to curb labour costs and has disproportionately affected wages of female workers, whose bargaining power is often weaker.

In that respect, the export-led growth miracle model of Taiwan was supported by lower female wages to maintain the competitiveness of domestic industries and shield them from intense

international competition in commodity markets and capital flight (Rodrik, 2000; Seguino, 1997, 2000a, 2007a). Busse and Spielmann (2006) obtain compatible cross-country results regarding the impact of gender inequality on creating comparative advantage in labour-intensive industries. They find that a 1 per cent increase in the gender wage gap increases the share of labour-intensive exports in total exports by 0.3–0.4 per cent (for the year 2000). Nevertheless, it is fair to mention that as trade expands, any positive effect on the level of female wages (even with a persistent level of gender wage gap), is likely to make alternative policies (to gendered wage-discrimination) necessary to stimulate investment, increase productivity and preserve competitiveness. Seguino (2000a), for instance, points out that Korea gradually had to rely increasingly more on domestic savings for its industrial expansion and its firms steadily shifted focus towards improving technologies in use to preserve the competitiveness of their products rather than cuts in labour costs.

3. Gender and Trade: Evidence

The purpose of this section is to critically evaluate empirical studies undertaken in recent years that provide evidence on the linkages between trade openness and gender inequality in income, as well as its underlying determinants: that is, the ownership of production factors and their prices (w_{ij}, r_{ij}). We present the evidence following the classification of the theoretical links presented in Section 2, and assess if the evidence supports the theoretical links.

Studies in this field vary considerably in their choice of dependent variable but may generally be said to explore causal mechanisms of the following generic form:

$$G_i = \alpha_0 + \alpha_1 T_i + \alpha_2 T_i \cdot X_i, \tag{2}$$

where G_i is a gender-specific variable (that may capture either the absolute or relative position of women with respect to employment, income, wages and so forth), T_i captures openness to international trade, X_i is the set of mediating factors that influence the magnitude and sign of the overall effect and where the subscript i corresponds to each country in the sample or case study. A positive coefficient for α_1 would hence capture a beneficial impact of trade for women (which depending on the outcome variable may suggest an increase in female employment either in absolute or relative terms, a rise in female wages or a closing of the gender wage gap). If one expects trade openness to reduce gender inequality in developing countries, but have the opposite effect for developed economies, X may include a measure of economic development Y (for example, GDP per capita). This expectation could be motivated by the HO model, which assumes that developing countries are likely to specialise more in unskilled-labour intensive production, with unskilled labour comparatively (that is, compared to the other production factors) often being a production factor 'owned' by women. By contrast, specialisation in high skilled and capital intensive commodities in developed economies may increase gender inequality to the extent that men comparatively own the respective production factors. Support for this hypothesis would hence require that $\alpha_{2(Y)} < 0$, where $\alpha_{2(Y)}$ captures the extent to which a country's level of development affects the impact of trade openness on women. This is examined in some of the studies reviewed below.

Other studies explore similar hypotheses based on HO assumptions by explicitly focusing on relative factor endowments, comparative advantage and the sectoral division of the economy. Hence, the higher the relative endowment of a production factor that is more equally distributed between men and women, the higher is likely to be the impact of trade openness on improving gender equality. In this case X may include a measure of the relative abundance of a comparatively equitably distributed production factor (for example, the share of labour to capital, P_l/P_k), possibly weighted by a measure of (in)equity in the distribution of its ownership between men and women (that is, w_{lf}/w_{lm}), and/or an analogous measure of the ownership of the other production factor (that is, w_{kf}/w_{km}). Support for this hypothesis would require that

$\alpha_{2(P)} > 0$, where $\alpha_{2(P)}$ captures the extent of relative abundance in the economy of the production factor that is comparatively often female-owned. In other words, the relative availability of production factors shapes the product specialisation patterns of individual countries, while the gendered control of these factors at an individual level influences the inequality between men and women in their capability to take advantage of opportunities arising from trade expansion.

3.1. Factor Prices (r_{ij}) – Wages

There has been much research devoted to the impact of trade openness on the gender wage gap and the wage of unskilled relative to skilled labour (with the latter being disproportionately male in its composition). We present details of some of the key studies in Table 1. Several of them suggest that the impact of trade expansion on female wages largely depends on the sector in which women find employment, with manufacturing offering better prospects than others. Evidence from Mexico, Bangladesh and Madagascar, especially for uneducated female employees, suggests that employment in export manufacturing industries provides female workers with higher wages compared to other activities (Tiano, 1994; Fussel, 2000; Kabeer and Mahmud, 2004; Glick and Roubaud, 2006; Fontana, 2007), without suggesting that the gender wage gap necessarily narrows. Subcontracted home-based workers, however, are a general exception to this pattern. Home-based workers in the informal sector (the majority of which are usually women) receive lower earnings compared to employees in the formal private sector and have to incur the set-up and operational costs to start production (Carr et al., 2000; Ghosh, 2001).

However, not all women receive direct payments for their labour contributions in trade-related activities. In many cases where agricultural production is outsourced by multinational companies (or intermediary firms) to individual households, it is often the male head of the household who negotiates terms, holds the contract and receives all payments from the export company (Fontana, 2003). This pattern is generally more prevalent in export vegetable production, while waged formal labour tends to be more common in the fruit and flower sector (Barrientos et al., 2004). Even when women receive direct payments for their involvement in agriculture, in countries such as Bangladesh and Pakistan, it is a common practice to hand over their earnings to their husbands (Elson, 1999). Physical proximity of spouses appears to matter, too, since women working away from their partners are more likely to receive directly payments for their employment (Kabeer, 2000).

While trade often offers women an opportunity to receive their own income, this does not necessarily translate into a closing of the gender wage gap. Although not separately quantified for export-orientated sectors, Joekes (1999) finds that female as a percentage of male earnings in a selected group of developing countries range from 50 to 80 per cent, about half of which may be attributed to discrimination, the remainder to job segregation and educational attainments. While female employees especially in the exporting manufacturing industries often receive higher wages than women in other industries, the wage gap between male and female workers expressed as a share of the former (even when performing similar tasks in comparable sectors) tends to be large, often above 50 per cent (Carr et al., 2000; Fleck, 2001; Artecona and Cunningham, 2002; Menon and Rodgers, 2009), and is frequently found to be widening, particularly in developing countries. In a number of studies it has been observed (Ghiara, 1999; Fleck, 2001; Artecona and Cunningham, 2002; Nicita and Razzaz, 2003) that in exporting industries, such as textiles and electronics, wages for skilled workers grow proportionately faster than those of unskilled employees. Since the unskilled labour force is dominated by women, this trend of increasing skill premiums widens the gap between the wages of male and female workers.[5] Likewise, results from the 1997 survey on socio-economic and health conditions of garment workers in Bangladesh reveal that there are gender wage differences in every job category in the garment industry (a particularly export-orientated sector), which have consistently increased over time (Paul-Majumder and Begum, 2000).

Table 1. Studies of the effect of trade on wages

Study	Direction of effect	Wages	Measure of openness	Sector	Geographical focus	Type of study
Artecona and Cunningham (2002)	$\alpha_1 < 0$ $\alpha_1 > 0$	Relative female-male discrimination component of wage gap	Difference in tariff levels and quota rates	Manufacturing	Mexico, 1987–1993	EC, WS
Berik (2007)	$\alpha_1 < 0$ $\alpha_1 > 0$	Female Relative female-male	Exports in output per industry	Manufacturing	Taiwan, 1981–1996	EC, WS, NA
Berik et al. (2004)	$\alpha_1 < 0$	Relative female-male	Imports in output per industry (Taiwan) Exports in output per industry (South Korea)	Manufacturing	South Korea, Taiwan, 1981–1999	EC, WS, NA
Black and Brainerd (2004)	$\alpha_1 > 0$	Relative female-male	Imports in output per industry	Manufacturing	US, 1976–1993	EC, NA
Braunstein and Brenner (2007)	$\alpha_1 < 0$	Relative female-male	FDI in total investment	Cross-sector	China, 2002	EC, HS, NA
Carr et al. (2000)	$\alpha_1 < 0$	Female relative female-male	Adoption of export-led strategies	Informal (HB): garments, NTA	NGF, 1990s	LR
Fleck (2001)	$\alpha_1 < 0$	Relative female-male	Adoption of export-led strategies	Manufacturing (Maquilas)	Mexico, 1997–1998	EC, HS
Fontana (2007)	$\alpha_{2(P)} > 0$ $\alpha_{2(P)} > 0$ $\alpha_{2(P)} > 0$ $\alpha_{2(P)} < 0$	Female (Bangladesh) Relative female-male (Bangladesh) Female (Zambia) Relative female-male (Zambia)	Abolition of tariffs and depreciation of exchange rate	Cross-sector	Bangladesh, 1994, Zambia, 1995	CGE
Fussel (2000)	$\alpha_{2(P)} > 0$	Female (Unskilled)	Adoption of export-led strategies	Manufacturing (Maquilas)	Mexico, 1993	EC, WS
Ghiara (1999)	$\alpha_1 \approx 0$	Relative female-male	Adoption of export-led strategies	Cross-sector	Mexico, 1987–1993	EC, WS-HS
Glick and Roubaud (2006)	$\alpha_1 > 0$	Female Relative female-male	Promotion of EPZs	Manufacturing (EPZs)	Madagascar, 1995–2002	EC, WS

(*continued*)

Table 1. (*Continued*)

Study	Direction of effect	Wages	Measure of openness	Sector	Geographical focus	Type of study
Kabeer and Mahmud (2004)	$\alpha_1 > 0$	Female	Adoption of export-led strategies	Manufacturing (Textiles)	Bangladesh, 1980s–2001	DS, HS
Kongar (2007)	$\alpha_1 > 0$	Relative female-male	Imports in output per industry	Manufacturing	US, 1976–1993	EC, NA
Maurer-Fazio and Hughes (2002)	$\alpha_1 > 0$	Female	Market liberalisation (Firm level)	Cross-sector	China, 1992	EC, WS
	$\alpha_1 < 0$	Relative female-male				
Menon and Rodgers (2009)	$\alpha_1 < 0$	Relative female-male	Imports and exports in output per industry	Manufacturing	India, 1983–2004	EC, HS
Nicita and Razzaz (2003)	$\alpha_1 > 0$	Female	Adoption of export-led strategies	Manufacturing (Textiles)	Madagascar, 1997,1999	EC, HS
	$\alpha_1 < 0$	Relative female-male				
Oostendorp (2009)	$\alpha_1 > 0$	Relative female-male	Imports and exports in GDP, FDI in GDP	Cross-sector	D1, D2, 1983–1999	EC, NA
	$\alpha_{2(Y)} > 0$	Relative female-male				
Paul-Majumder and Begum (2000)	$\alpha_1 < 0$	Relative female-male	Adoption of export-led strategies	Manufacturing (Textiles)	Bangladesh, 1990, 1993, 1997	DS, CS
Santos and Varejão (2007)	$\alpha_1 > 0$	Relative female-male (Overall)	Expansion of sector	Services (Tourism)	Portugal, 2000	EC, WS
	$\alpha_1 < 0$	Relative female-male (Tourism)				
Siddiqui (2009)	$\alpha_{2(P)} < 0$	Female (Unskilled)	Reduction of tariffs	Cross-sector	Pakistan, 1993	CGE
	$\alpha_1 > 0$	Relative female-male				
Thrane (2008)	$\alpha_1 < 0$	Relative female-male	Expansion of sector	Services (Tourism)	Norway, 1994–2002	EC, WS
Tiano (1994)	$\alpha_1 > 0$	Female	Adoption of export-led strategies	Manufacturing (Maquilas)	Mexico, 1990s	CS

Abbreviations: CGE: Computer General Equilibrium Model; CS: Case-Study; D1: Developing Countries; D2: Developed Countries; DS: Descriptive Statistics; EC: Econometrics Analysis; EPZ: Export-Processing Zone; FDI: Foreign Direct Investment; GDP: Gross Domestic Product; HB: Home-Based Work; HS: Household Survey; LR: Literature Review; NA: National Accounts; NGF: No Geographic Focus; NTA: Non-Traditional Agriculture; WS: Worker Survey.

Similarly, while female employment has increased in recent years in China, there has been a simultaneous widening of the gender wage gap, only partially explained by gender productivity differences (Maurer-Fazio and Hughes, 2002; Braunstein and Brenner, 2007), and exacerbated by the gradual liberalisation of markets and expansion of private ownership that enhanced the monopsonistic wage-setting power of firm managers, and suppressed female wages.[6]

On the other hand, there is some evidence (supporting Becker's theory) that the gender wage gap has diminished in export-oriented manufacturing industries in industrialised nations such as the US as a result of increased exposure to competition (Black and Brainerd, 2004; see also Oostendorp, 2009, who claims that trade decreases the gender wage gap particularly for countries with a sufficiently high level of economic development). However, a recent revisit of the Black and Brainerd study suggests that the reduction of the gender-wage gap across US manufacturing firms was more plausibly due to a decrease of female employment in low-wage production rather than the erosion of this gap in the face of international competition (Kongar, 2007; see also Berik et al., 2004 for similar evidence on the gender wage gap in export-oriented manufacturing for South Korea and Taiwan).

Further research along these lines would deepen our understanding of gender-trade linkages. Furthermore, as discussed in Section 2, the causality of the relationship linking trade openness and gender inequality (in wages) runs in both directions, and there is hence a need to properly explore its direction (for example, by the use of time-lagged explanatory variables). More attention has to be devoted to ensure that statistical relationships are not spurious (particularly for those studies that discuss descriptive statistics and simple correlations without performing rigorous econometric analysis with the inclusion of multiple explanatory variables).

3.2. Share of Production Factors (w_{ij}) – Employment

The empirical research that has attempted to link trade openness with ownership and utilisation rates of production factors has almost exclusively focused on the impact of trade on employment by gender (although there is also some tentative evidence of a negative link between freer trade and gender inequality in human capital, particularly in Sub-Saharan Africa, as a result of disproportionately high demand for unskilled female labour, see Baliamoune-Lutz, 2006). We present details of some of the key studies in the literature linking trade and employment by gender in Table 2. On balance the evidence points to an overall beneficial impact of trade expansion on female employment in developing economies both in absolute terms (Standing, 1999; Barrientos et al., 2004; Kabeer and Mahmud, 2004; Fontana, 2007) as well as relative to male employment (Ahmed and Bukhari, 2006; Özler, 2007; Ederington et al., 2009), although many studies provide evidence to the contrary (Ghiara, 1999; Ghosh, 2001; Chamarbagwala, 2006; Shu et al., 2007; Ding et al., 2009; Rani and Unni, 2009; Siddiqui, 2009). Much of the beneficial impact of freer trade on female employment has been concentrated in the exporting manufacturing sector in developing countries (particularly in textiles and leather) favouring predominantly unskilled women (see Standing, 1999; Özler, 2001; Kabeer and Mahmud, 2004; Chamarbagawala, 2006; Siddiqui, 2009). At the same time, import penetration from non-OECD countries has resulted in extensive job losses in the textiles, apparel and leather industries in OECD countries, which particularly affected female employees (Kucera and Milberg, 2000; Kucera, 2001).

Some studies suggest that while most trade-induced employment opportunities for women arise in manufacturing, such opportunities for employment in traditional agriculture tend to be relatively rare.[7] First, women are more likely than men to be small-scale farmers, and therefore more constrained in expanding production as well as more vulnerable to price shocks (Garcia, 2005; Fontana, 2007). In Morocco, for instance, the average size of land holdings of men is about a hectare, while that of women is about half a hectare (FAO, 2003). Second, women are more restricted than men in their access to credit and technological inputs, such as improved seeds, fertilisers and pesticides, and are therefore less able to take advantage of new market

Table 2. Studies of the effect of trade on employment

Study	Direction of effect	Measure of employment	Measure of openness	Sector	Geographical focus	Type of study
Ahmed and Bukhari (2006)	$\alpha_1 > 0$	Relative female-male	Imports and exports in GDP	Overall economy	Pakistan, 1973–2005	EC, NA
Barrientos et al. (2004)	$\alpha_1 > 0$	Female	Adoption of export-led strategies	Manufacturing HV agriculture	NGF	LR
Chamarbagwala (2006)	$\alpha_{2(P)} > 0$	Female (Unskilled)	Net exports in output per industry	Manufacturing	India, 1983–2000	EC, WS, DS, IOFA
	$\alpha_{2(P)} < 0$	Female (Skilled)				
	$\alpha_1 < 0$	Relative female-male				
	$\alpha_{2(P)} < 0$	Female (Unskilled)		Services		
	$\alpha_{2(P)} > 0$	Female (Skilled)				
	$\alpha_1 < 0$	Relative female-male				
Ding et al. (2009)	$\alpha_1 < 0$	Relative female-male (Married women, men)	Adoption of export-led strategies	Cross-sector	China, 1995–2002	DS, HS
Ederington et al. (2009)	$\alpha_1 > 0$	Relative female-male (overall)	Exports in output per industry	Manufacturing	Colombia, 1984–1991	EC, NA
	$\alpha_{2(P)} < 0$	Relative female-male (Capital-Intensive sectors)				
Fontana (2007)	$\alpha_{2(P)} > 0$	Female overall (B),	Abolition of tariffs and depreciation of exchange rate	Cross-sector	Bangladesh (B), 1994; Zambia (Z), 1995	CGE
	$\alpha_{2(P)} < 0$	female garments (B), Female manufacturing (B)				
	$\alpha_{2(P)} > 0$	Relative female-male (B)				
	$\alpha_{2(P)} > 0$	Female overall (Z), female mining (Z)				
	$\alpha_{2(P)} < 0$	Female manufacturing (Z)				
	$\alpha_{2(P)} < 0$	Relative female-male (Z)				
Ghiara (1999)	$\alpha_1 < 0$	Female	Adoption of export-led strategies	Trade sectors	Mexico, 1987–1993	EC, WS-HS
Kabeer and Mahmud (2004)	$\alpha_1 > 0$	Female	Adoption of export-led strategies	Manufacturing (Textiles)	Bangladesh, 1980s–2001	DS, HS
Kongar (2007)	$\alpha_1 < 0$	Female (Overall)	Imports in output per industry	Manufacturing	US, 1976–1993	EC, NA
	$\alpha_{2(P)} < 0$	Female (Unskilled)				
	$\alpha_{2(P)} > 0$	Female (Skilled)				
	$\alpha_1 < 0$	Relative female-male				

(*continued*)

Table 2. (*Continued*)

Study	Direction of effect	Measure of employment	Measure of openness	Sector	Geographical focus	Type of study
Kucera and Milberg (2000)	$\alpha_1 < 0$	Relative female-male	Increase in net exports	Manufacturing (Textiles)	OECD, 1978–1995	IOFA/DS
Özler (2001)	$\alpha_1 > 0$	Relative female-male	Exports in output per industry	Manufacturing	Turkey, 1983–1985	EC, NA
	$\alpha_{2(P)} > 0$	Relative female-male (Unskilled)				
	$\alpha_{2(P)} < 0$	Relative female-male (Capital-intensive sectors)				
Özler (2007)	$\alpha_1 > 0$	Relative female-male	Adoption of export-led strategies	Manufacturing	Turkey, 1986–1996	DS
	$\alpha_{2(P)} > 0$	Relative female-male (Skilled)				
Rani and Unni (2009)	$\alpha_1 < 0$	Relative female-male	Adoption of export-led strategies	Manufacturing (Home-based subcontracting)	India, 1994–1995, 2000–2001	EC, WS
Siddiqui (2009)	$\alpha_{2(P)} > 0$	Female (Unskilled)	Reduction of tariffs	Cross-sector	Pakistan, 1993	CGE
	$\alpha_1 < 0$	Female (overall)				
	$\alpha_1 < 0$	Relative female-male				
Standing (1999)	$\alpha_1 > 0$	Female	Adoption of export-led strategies	Manufacturing (Textiles)	D1, D2: NGF, 1975–1995	DS
	$\alpha_1 > 0$	Relative female-male				
Tucker (2007)	$\alpha_1 < 0$	Relative female-male	Expansion of sector	Services (Tourism)	Turkey, 1995–2005	ES
von Braun et al. (1994)	$\alpha_1 < 0$	Relative female-male	Commercialisation, new technologies	Agriculture	The Gambia, 1980s	CS, EC, HS
Wilson (2008)	$\alpha_1 < 0$	Relative female-male	Expansion of sector	Services (Tourism)	Mexico, 2005	DS
Wold (1997)	$\alpha_1 < 0$	Relative female-male	Adoption of export-led strategies	Agriculture	Zambia, 1990s	CS/DS

Abbreviations: CGE: Computer General Equilibrium Model; CS: Case-Study; D1: Developing Countries; D2: Developed Countries; DS: Descriptive Statistics; EC: Econometrics Analysis; ES: Ethnographic Study; HS: Household Survey; HV: High-Value; IOFA: Input-Output Factor Analysis; LR: Literature Review; NA: National Accounts; NGF: No Geographic Focus; WS: Worker Survey.

opportunities in non-traditional agriculture that international trade gives rise to. For the same reasons, when traditionally female-intensive crops become commercialised, men may enter and take over the sector (assisted by their relatively easier access to credit), as has happened with groundnuts in Zambia (Wold, 1997) and rice in the Gambia (von Braun, 1994).

Some recent studies have concentrated on the role of trade in stimulating female employment (both in absolute terms, as well as relative to men) in the services sector and then in the rapidly expanding ICT (Information and Communication Technologies) sector in particular; see Gurumurthy (2004) and Prasad and Sreedevi (2007). The employment gains for both sexes are geographically concentrated (and are found particularly in India, Mexico, Jamaica and the Philippines), and often substandard health and safety conditions at work are reported (Pearson and Mitter, 1993; Howcroft and Richardson, 2008). There is also ample evidence of a 'digital divide' within the ICT sector (see Patel and Parmentier, 2005; Wajcman and Lobb, 2007), which refers to occupational segregation by gender that has women performing tasks for which relatively few skills are required (for example, data processing) and men dominating the better-paid high-skilled slots (for example, programming). The recent rapid expansion of the tourism industry has offered employment opportunities for both the female and male population (Sinclair, 1999; Wilson, 2008), typically with relatively little gender bias, unless in countries with strong cultural norms against females serving strangers[8] as well as in the sex services sector, where employment is not always voluntary and carries health risks particularly for women (Kempadoo, 1999, 2004; Clancy, 2002; Cabezas, 2009). Fertility (or reproductive) tourism has also been on the rise, with commercial surrogacy in particular often denounced as an exploitative practice against poorer women in developing countries (see Donchin, 2010).

Trade expansion may thus be associated both with positive and negative effects on women's employment opportunities and livelihoods, which may vary greatly by sector. The net effect of trade on female employment in any given country will naturally depend on which effects dominate.[9]

4. Concluding Remarks

There are multiple ways in which trade and gender income inequities are linked through the labour market, which we have attempted to summarise in this article. While most studies suggest that trade liberalisation and expansion are not gender neutral, there is no consensus on the size and sign of effects. However, on balance the evidence for developing countries points to an overall beneficial impact of trade expansion on female employment, both relative to male employment and in absolute terms, although largely concentrated in unskilled manufacturing. By contrast, the bulk of the evidence suggests a widening gender wage gap as a result of freer trade. Furthermore, existing gender inequality in labour markets co-determines where a country's comparative advantage lies and thus shapes its export strategies. East Asia's growth strategy provides the most powerful illustration.

Trade liberalisation alters the relative and absolute size of productive sectors, and thereby reinforces certain inherent characteristics of the labour market and the overall structure of the economy and accordingly reinforces or weakens embedded patterns of gender inequality. There is a need to deepen our understanding of the functioning and dynamics of the labour market, in order to better explain the resulting pattern of gendered differences in wages, employment, and income. Precise knowledge of the wage elasticities of labour supply and demand for men and women separately, as well as the degree of substitutability of male and female labour, would provide a firmer handle on understanding the key gender-trade causal mechanisms (these are often provided only for developed economies where labour statistics are widely available, see Evers et al., 2008). Estimating these is demanding on the data, though, since such parameters are likely to be both country and sector specific. Nevertheless, they would aid our understanding of gendered labour supply and demand decisions, and how the two jointly explain gendered labour market segregation, which trade in certain occasions reinforces and in others weakens, as illustrated throughout this article.

A further remark is that a focus on gender – how trade-induced shifts interact with the socially constructed roles of men and women – goes beyond a focus on women (a common limitation in the literature). Many studies focus on the impact of trade expansion on female employment and earnings, neglecting the effect of trade on male employment patterns, and its overall impact at the household level. As Standing (1999) points out, the increased feminisation of many manufacturing sectors in particular (electronics, textiles, garments) corresponds not only with newly created employment opportunities for women in such sectors but also with females substituting for males in existing jobs. This suggests the importance of recognising that any beneficial impacts of trade on female employment and earnings may be simply counterbalanced by decreases in those of males, and of investigating the net effect on income at the household level.

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Notes

1. Heterodox trade theories, on the other hand, critique the Heckscher-Ohlin model and its conclusions by emphasising the role of absolute (rather than comparative) advantage in determining trade flows and gender inequalities (Elson et al., 2007).
2. In a recent paper, though, Neumayer and de Soysa (2007) suggest that trade expansion itself may positively influence the overall protection provided to women's economic rights. A measure of economic rights is used that extends beyond wage differentials and employment to capture legal and institutional aspects, such as equality in promotion practices, protection against discrimination at work, protection from sexual harassment and the right to work in male-dominated professions (such as the military and police force). Moreover, the measure does not only capture the availability of legal protection but also its enforceability. A doubling of the share of exports and imports in GDP would translate into an improvement by approximately one unit in the 0–4 index of female economic rights (Neumayer and de Soysa, 2007).
3. In order to capture such gendered differences in access to production factors, the Gender, Institutions and Development Database of the Organisation for Economic Cooperation and Development (OECD, 2009) constructs a 0 to 1 index of women's access to land, bank loans and other forms of property, where 0 indicates full access to resources. Women's access to resources is especially restricted in African and Middle Eastern countries, where the index is well above 0.5. This contrasts dramatically with women's access to resources in developed countries, where the index typically equals 0.
4. In rural areas in Mexico and Tanzania, for instance, husbands often forbid their wives to seek employment outside their households (see Willis, 1993 and Kabeer, 1996 respectively).
5. It is worth noticing that there is often a widening wage gap also across women; for example, between skilled and unskilled women in formal employment in Mexico (Ghiara, 1999).
6. While state enterprises generally supported gender equality in wages, there is evidence that suggests that in the private sector female wages are more suppressed. Using the 1992 Chinese Labour Market Project data, Maurer-Fazio and Hughes (2002) find that the proportion of the gender wage gap that remains unexplained after controlling for gender differences in productivity is 47.4 per cent amongst private joint-venture firms and less than half, 23.0 per cent, among state enterprises.
7. High-value non-traditional agriculture (for example, horticulture and floriculture) has on the other hand stimulated female labour employment to a certain extent – although often in the form of seasonal 'buffer' employment, with men holding the relatively more secure positions (Barrientos et al., 2004).
8. For example, male employment tends to benefit more from the expansion of the tourism industry in predominantly Muslim nations (see Tucker, 2007).
9. The relative abundance of most African and Asian nations in land and unskilled labour respectively, explains to a large extent why Africa has specialised more in agricultural commodities, whereas Asia in light manufacturing that depends on manual labour (Wood, 1994). Women tend to constitute a disproportionately large share of the unskilled labour

force in most developing countries, while men unevenly dominate in terms of land ownership. This disparity in trade specialisation explains to some extent why trade expansion has benefited women to a larger extent in Asia (as unskilled workers, often employed in the garment and textile industry) rather than in Africa, where limited female access to land as well as other factors has hampered their involvement in agricultural exporting activities.

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